

## Faster finances

The automatic checkout equipment for the Apollo spacecraft is one of the most complex computer systems in the world. Used to integrate the extensive Apollo checkout procedures from manufacture to launch, it has spawned major advances in computer systems technology.

These advances have been applied by TRW Inc. to retail-store and bank-transaction systems, as well as to control systems for electric power-transmission grids—reducing the chance of power blackouts such as the one in 1968.

The store and bank credit system has caused significant improvements in speed and accuracy of transactions, credit authorizations, and inventory control. To date, TRW has installed some 60 retail computer systems for 40 of the nation's largest retail chains. More than 50,000 point-of-sale terminals are connected to these systems.

Commercial banks in the U.S. have remained at about 14,000 since 1946, but bank branches today have doubled that number. Some 40-billion checks will be written each year by 1980. The banking explosion requires tellerless bank facilities and an automated clearinghouse for interbank exchange of paperless entries.

NASA's Apollo guidance software has been adapted by TRW both for tellerless banking terminals and for faster teller transactions, in which almost all

*Automatic checkout equipment devised for manned landings on the moon has been spun off to speed bank transactions, car rentals, airline ticketing, and other business functions.*

normal human errors are eliminated.

A similar computerized service, called "Validata," now is used nationwide by airlines, airline ticket offices, car rental agencies, and hotels. A central computer contains 10-million credit records. TRW subscribers use small terminals at ticket counters or cash registers to make credit inquiries when their customers submit credit cards, checks, airline tickets, and other noncash payments. The Validata system has 1,000 subscriber terminals in 151 localities throughout the country.

## Drying thermoplastics

Taking an organized, thorough look at existing technology before beginning research has helped many companies save significant time and money. Retrospective searches to do that, as well as other forms of technical assistance offered to industry routinely by the NASA Industrial Application Centers. The recent experience of Conair Inc., Franklin, Pa., is typical. Conair employs 90 people to produce machinery for the plastics industry. In searching for an improved method of removing water from polystyrene resins without damaging the materials, the company turned to the NASA center at the University of Pittsburgh.

The center searched the NASA and other computerized files for microwave drying of thermoplastics. About 300 relevant citations were retrieved—eight of which were identified as being directly applicable to the problem. The company estimates it saved a minimum of a full year in compiling research results assembled by the information center.

